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10/828,386	04/20/2004	Khurram Muhammad	TI-34777	4826
23494 7590 01/02/2009 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265				
EXAMINER				
DSOUZA, JOSEPH FRANCIS A				
ART UNIT		PAPER NUMBER		
2611				
NOTIFICATION DATE		DELIVERY MODE		
01/02/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com

Office Action Summary

Application No.

10/828,386

Applicant(s)

MUHAMMAD ET AL.

Examiner

ADOLF DSOUZA

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 13, 15 - 21 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/08)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Response to Arguments

1. Applicant's correction to the drawings, specification and claims in response to the objections have been accepted by the Examiner.
2. Applicant's arguments see Remarks filed 1/24/2008 with respect to the 35 USC 112/1st paragraph rejection have been fully considered and are persuasive. The 112/1st paragraph rejection of claim 2 has been withdrawn.
3. Applicant's arguments, see Remarks, filed 1/24/2008 with respect to the rejection(s) of claim(s) 1 under 35 USC 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Staszewski et al. (US 20030035499).

Specification

4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because the paragraph number [040] should be removed from the abstract. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 1 is rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory “process” under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. The instant claims, such as independent claim 1, do not positively tie to another statutory category (such as a particular apparatus) that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. Claim 1 does not have apparatus disclosed performs the method steps.

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1- 13, 15 – 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Staszewski et al. (US 20030035499).

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1 – 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Staszewski et al. (US 20030035499).

Regarding claim 1, Staszewski discloses a method for complex image rejection filtering in a direct sampling mixer ([0004]) comprising the steps of:

sampling an RF input with multiple phases of a local oscillator clock, each of the local oscillator phases producing a discrete-time signal stream (Abstract; [0004]);

processing the multiple phases of the discrete-time signal in multiple paths, the paths sharing among themselves the discrete-time samples, whereby a bandpass filter characteristic is achieved during the processing step, and whereby an RF image is substantially rejected ([0031]; Fig. 3; [0060]; [0061]; wherein the bandpass filter is obtained by selecting the IIR filter appropriately).

Regarding claim 2, Staszewski discloses the multiple phases of the local oscillator clock comprise two phases I and Q spaced approximately 90 degrees apart (Fig. 1b; [0053]).

Regarding claim 3, Mole discloses the multiple phases of the local oscillator clock consist of four phases I+, I-, Q+, Q-, spaced approximately 90 degrees apart [0089].

Regarding claim 4, Staszewski discloses the discrete-time signal stream comprises charge packets ([Abstract; [0019]).

Regarding claim 5, Staszewski discloses sharing the input signal ([0089] where the input signal is hared among the 4 phases).

The limitation that the discrete time input signal comprises charge packets is as analyzed in claim 4 above.

Regarding claim 6, Staszewski discloses the step of converting an RF input voltage into current ([0004]).

Claim 7 is similarly analyzed as claims 1, 4.

Regarding claim 8, Mole discloses a complex filter system for filtering a high frequency input signal, the complex filter comprising: a first IIR filter for sampling an I+ phase of the input signal; a second IIR filter for sampling an I- phase of the input signal; a third IIR filter for sampling an Q+ phase of the input signal; a fourth IIR filter for sampling an

Q- phase of the input signal; wherein the IIR filters are interconnected for rotation of filtered signals such that in combination the interconnected IIR filters provide a complex filter ([0089]; [0061] – [0067]).

Regarding claim 9, Staszewski IIR filter further comprises a history capacitor, rotating capacitor, and buffer capacitor adapted for sampling, storing and transferring charge from the input signal; and wherein each IIR filter has a pole determined by the ratio of its rotating capacitor to its history capacitor and is adapted to provide filtering of an input signal ([0017]).

Regarding claim 10, Staszewski discloses two or more complex filter stages according to claim 8 coupled in a cascading configuration for providing high order filtering ([0082]).

Regarding claim 11, Staszewski discloses one or more transconductive elements coupled between adjacent stages ([0117], [0124]).

Regarding claim 12, Staszewski discloses one or more amplifier elements coupled between adjacent stages ([0124]).

Regarding claim 13, Staszewski discloses one or more buffer elements coupled between adjacent stages ([0036]; [0081]).

Regarding claim 15, Staszewski discloses that the complex filter comprises a loop filter in a sigma-delta analog-to-digital converter ([0088]).

Claim 16 is analyzed similarly to claim 8

Claim 17 is analyzed similarly to claim 15

Claims 18 – 21 are similarly analyzed as claims 10 – 13 respectively.

Allowable Subject Matter

11. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other Prior Art Cited

12. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

The following patents are cited to further show the state of the art with respect to image rejection in mixers:

Staszewski et al. (US 5 20030083033) discloses Sampling mixer with asynchronous clock and signal domains.

Staszewski et al. (US 20030040294) discloses Efficient charge transfer using a switched capacitor resistor .

Souetinov et al. (US 6,324,388) discloses an image reject mixer circuit arrangements.

Salminen (US 6,574,457) discloses a Two-transistor mixer.

Contact Information

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADOLF DSOUZA whose telephone number is (571)272-1043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Adolf DSouza
Examiner
Art Unit 2611

AD

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/David C. Payne/
Supervisory Patent Examiner, Art Unit 2611